Space Weather Forecast

Issued on Tuesday, 08 November 2022 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of M-class flares (R1; Minor radio blackouts). Very slight chance of G1/Minor storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with several Common-class flares observed in the past 24 hours, and at 07/0011UTC a single Moderate flare was recorded. There are six numbered and one unnumbered active regions on the visible disc. A large region in the east remains the most complex sunspot group, with evidence of some weak spots of mixed magnetic field appear to be developing in the intermediate portion of the group, a potential sign of increasing complexity. Another spot in the far northeast is the second largest region, with a moderately sized mature spot, but is inactive. The only other moderately sized spot resides in the northwestern hemisphere. All other spots are relatively small and simple at this time. No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has been generally slow-ambient with occasional increases to slightly elevated levels. Density saw a steady increase from average to above average levels during much of the first half of the UTC day, before erratically decreasing back to near average levels after 07/1000 UTC. This is suspected to be due to the arrival of a slow CME at Earth. Total magnetic field strength, IMF, was initially weak, but steadily increased to become mainly moderate from around 07/0700 UTC. A brief strong interval was observed between 07/1630-07/1715 UTC. The important north-south component, Bz varied weakly at first, but strengthened and became predominantly moderately negative between 07/0930-1745 UTC. In the latter part of the UTC day the Bz has been predominantly weak to moderate and positive. Geomagnetic activity was initially Quiet (Kp0-1) but increased to reach Minor Storm/G1 (Kp5) levels between 07/1500-2100 UTC, before easing back to Quiet levels (Kp2) in the most recent (07/2100-2400 UTC) interval.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be generally Low, with a chance of Moderate activity.

Solar Wind / Geomagnetic Activity: Geomagnetic activity is expected to be mainly Quiet to Unsettled given generally slow-ambient solar winds, but there is a chance of Active intervals at times. There is a very slight chance of G1/Minor Storm intervals, mainly due to the possible arrival of one or more coronal hole high speed streams in the coming days.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	10	10	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	40	50	50
Very Active	R3 to R5 X	No	3	3	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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